

*If you are using a printed copy of this procedure, and not the on-screen version, then you **MUST** make sure the dates at the bottom of the printed copy and the on-screen version match. The on-screen version of the Collider-Accelerator Department Procedure is the Official Version. Hard copies of all signed, official, C-A Operating Procedures are kept on file in the C-A ESHQ Training Office, Bldg. 911A*

C-A OPERATIONS PROCEDURES MANUAL

14.5.2 EMS Training for Magnet Cleaning Operations

Text Pages 2 through 5

Hand Processed Changes

<u>HPC No.</u>	<u>Date</u>	<u>Page Nos.</u>	<u>Initials</u>
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Approved: _____ *Signature on File* _____
 Collider-Accelerator Department Chairman Date

M. Van Essendelft

Environmental Training Package for Electronic Assembly Operations

This package has been designed to aid in the delivery of required job-specific training for the following in-place magnet cleaning activities in buildings 912, 913 and 927 identified in the environmental process evaluation

- Flushing with nitrogen/water
- Flushing with acid solution
- Liquid discharges
- Radioactive waste generation

Your position has been determined to have a potential significant impact to the environment. Thus, C-A Department Management has prepared the questions & answers on the following pages for your specific work/processes.

This environmental material is incorporated into your current job and procedure training. If you have specific questions about this information after you read the material, contact the C-A Department ESH&Q Division Head, Ray Karol (<mailto:rck@bnl.gov>).

You may keep this material as a handout and use it as a reference aid.

This specific training course is linked to your job-training assessment (JTA). You must read and acknowledge this material as part of the qualification to perform cooling water system maintenance. Please fill out the Read and Acknowledgement form and return it promptly.

[Read & Acknowledgement Form](#)

Environmental Process Evaluation Title: Cooling Water Systems

Environmental Aspects: Atmospheric Discharge, Radioactive Waste, Liquid Discharge

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Course Objective: Because your work activities have been identified as having a potential significant impact to the environment, this course has been designed to provide you with the job-specific information that you must know to protect the environment.

1) What potential impacts to the environment are associated with your activities?

- Backwashing magnets with magnet cooling water is the preferred method to clean magnet cooling water passages. If this is unsuccessful, flushing with a nitrogen/water mixture or, if also unsuccessful, flushing with an acid solution is performed. These operations can release radioactive materials or hazardous chemicals. The following materials in your work may have adverse impacts if improperly handled:
 - Magnet cooling water may be radioactive or hazardous or both
 - Flush water may be radioactive or hazardous or both
 - Bag filters used to filter radioactive acid waste are radioactive and may be hazardous
 - Chemicals such as Safe Acid Powder H-400 (used for the acid flush) and sodium bicarbonate (used to neutralize the used acid) may be hazardous

2) What consequences may result if your operations were to impact the environment?

- Hazardous, industrial or radioactive waste mismanagement could contaminate the environment and incur RCRA or local agency penalties
- Improper discharges to the sanitary sewer system could result in a violation of the BNL State Pollutant Discharge Elimination System (SPDES) permit
- Atmospheric discharges could contaminate the environment and/or violate NYSDEC air emission regulations
- Improper release of radioactive materials to uncontrolled areas may result in enforcement actions under Federal Rule 10CFR835
- Improper release of wastes can create loss of regulator and public trust

3) What benefits or positive effects would you notice with improved environmental performance?

- Safer, cleaner workplace
- Clear roles and responsibilities
- Improved relationship with regulators and the public
- Control of disposal costs
- Prevention of remediation costs
- Reduced emissions

4) What role and responsibility do you have for these potential impacts and environmental performance?

My responsibilities are

- To ensure Hazardous, Radioactive and Industrial wastes are handled according to C-A procedures
- To ensure controls are in place
- To ensure controls keep working
- To take action when controls fail
- To create and keep appropriate records relative to operational controls
- To contact supervision if unsure of how to perform the work or if the procedures are unclear or incorrect

5) What controls or procedures are implemented to reduce the potential for emergency?

- [C-A OPM 8.20](#), Procedure for Handling and Disposing of Hazardous Waste
- [C-A OPM 8.20.2](#), Radioactive Waste Disposal
- [C-A OPM 8.22](#), Procedure for Handling and Disposal of Non-Hazardous and Recyclable Solid Waste
- [C-A OPM 8.20.1](#), C-A Hazardous Waste Trailer (HWT) (90 Day Accumulation Area)
- [C-A OPM 2.28](#), Enhanced Work Planning (C-A version of ES&H Std. 1.3.6)
- Satellite Accumulation Area
- Chemical Management System
- Tier I program and self-evaluations

6) How would you respond in an emergency to reduce the potential for environmental impact and what actions could be taken to mitigate the event?

- See [C-A OPM 3.0](#), Local Emergency Plan for the C-A Department
- Call Spill Response Hotline – X2222 or 911 (If calling from a cell phone, dial (631) 344-2222)

7) What pollution prevention and waste minimization techniques have been or could be considered to reduce or eliminate the potential to impact the environment?

- If you place flush water or acid drums in secondary containment during the flushing operation
- If you ensure that all fittings and connections are properly made and are promptly verified to be leak-tight when cleaning magnets and when restoring magnet cooling water connections to normal configuration
- Installation of filters in the magnet cooling water system downstream of the black iron pipes prior to the magnets. The black iron pipes generate particulates that can plug the magnet cooling passages.

- Installation of a deionization system in the cooling water system.

Suggestions or comments about pollution prevention or waste minimization are always welcome by C-A management.

8) Are there any key Environmental-specific Competency Requirements for this position?

- None

Additional Environmental Information:

Click on the items below to learn more about C-A Cooling Water Operations Operations.

- [Process Assessment](#) for C-A Magnet Cleaning Operations
- [Environmental Management Program](#)
- [Operational Control Form](#) for C-A Magnet Cleaning Operations